intersection over union (IU/OverUnion is a form of measurement used to indicate the accuracy of an object detector.) for grade 3-4. The mean average precision (mAP) score of our object detection model is 56.9 for test data set (image 1). The determination quality of the model can be affected by the distribution and number of each class.

Conclusion: The experience of the x-ray technician, dose adjustment, and position differences due to patient compliance complicate the standardization of SIJ radiography and this may cause interobserver disagreement (3). Artificial intelligence models to be created with a larger and homogenous data set in order to ensure objective standardization in the interpretation of the SIJ graph can help physicians.

REFERENCES:

Disclosure of Interests: None declared.
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**POSO037**

**DOES IMAGING OF THE SACROILIAC JINT DIFFER IN PATIENTS PRESENTING WITH UNDIAGNOSED BACK PAIN AND PSORIASIS, ACUTE ANTERIOR UVEITIS, AND COLITIS: AN INCEPTION COHORT STUDY**

W. P. Maksymowych1,2, U. Weber,3 J. Char4, R. Carmona,2 J. Yeung,4 S. Aydin,5 J. Reis,5 L. Martin, A. Masetto,6 O. Ziouzina,6 D. Mosher,6 S. Keeling,7 R. Rohekar,8 R. Dadashova,9 J. Paschke,10 A. Carapellos,10 G. R. Lambert2,10 on behalf of Screening for Axial Spondyloarthritis in Health Research Institute, Medicine, London, Canada; 2 doi: 10.1136/annrheumdis-2021-eular.3343

**Objectives:** To compare the influence of age on the prevalence of inflammatory and structural changes in the sacroiliac joint (SIJ) as assessed by magnetic resonance imaging (MRI). Several studies have reported high rates of bone marrow edema (BME) suggestive of inflammatory SIJ changes in up to 20% of individuals in the general population <45 years. An update of the definition of a positive MRI of the SIJ in axSpA for classification purposes, based on the number of slices or quadrants showing BME or structural changes such as erosions or fat lesions (FL), was recently published by ASAS.

**Methods:** MRI of the SIJ of patients referred for differential diagnosis of back pain who were finally diagnosed with axSpA or not by experienced rheumatolo-gists, were evaluated using semi-coronal STIR and T-weighted MRI sequences. All images were scored blinded to, age, sex and diagnosis for the occurrence of BME, FL, erosions and ankylosis on the level of SIJ-quadrants (SIJ-Q). Patient groups were built based on decade of age (until 29, 30-39, 40-49 and ≥50 years). Results: A total of 309 patients (175 axSpA and 134 non-SpA) with complete MRI sets included in the analysis. The mean age was 38.5±11.4 and 43±13.8, 66.9% and 35.8% were male, the mean CRP was 1.6±2.4 and 1.1±2.1mg/dl and the median back pain symptom duration was 48 and 60 months, respectively. The number of SIJ-Q with BME and erosions was significantly higher in axSpA vs. non-SpA independent of the age group (Table 1). In comparison, with excep-tion of the patients in the oldest population (≥50 years), the number of SIJ-Q with FL and the number of patients with at least one FL was not different between subgroups, while the number of erosions and FL but not BME was higher in both groups with increasing age. In the univariate analysis, only female sex was significantly associated with higher occurrence of FL.

**Conclusion:** Despite a relatively high prevalence in non-SpA patients, BME and erosions were significantly more frequent in axSpA independent of age, while the presence of FL was not different between groups. FL and erosions are increas-ingly found in older age groups independent of diagnosis. These data are relevant for the interpretation of MRI findings in the SIJ of patients suspicious of axSpA.
Table 1. Comparison of MRI findings between axSpA and non-SpA patients at different age groups

<table>
<thead>
<tr>
<th>Age subgroup</th>
<th>Diagnosis</th>
<th>Mean number of SI quadrants</th>
<th>Proportion of patients with...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BME</td>
<td>FL</td>
<td>Erosion</td>
</tr>
<tr>
<td>unlt 29 years</td>
<td>axSpA (n=48)</td>
<td>6.0±3.7</td>
<td>6.0±3.7</td>
</tr>
<tr>
<td></td>
<td>non-SpA (n=52)</td>
<td>1.6±1.5</td>
<td>1.6±1.5</td>
</tr>
<tr>
<td>30-39 years</td>
<td>axSpA (n=50)</td>
<td>5.0±4.1</td>
<td>7.6±4.6</td>
</tr>
<tr>
<td></td>
<td>non-SpA (n=28)</td>
<td>1.0±1.3</td>
<td>0.9±0.8</td>
</tr>
<tr>
<td>40-49 years</td>
<td>axSpA (n=47)</td>
<td>4.2±3.7</td>
<td>11.3±6.1</td>
</tr>
<tr>
<td></td>
<td>non-SpA (n=16)</td>
<td>1.9±1.0</td>
<td>3.0±0.8</td>
</tr>
<tr>
<td>≥50 years</td>
<td>axSpA (n=33)</td>
<td>5.2±4.9</td>
<td>16.4±4.5</td>
</tr>
<tr>
<td></td>
<td>non-SpA (n=18)</td>
<td>1.9±2.1</td>
<td>13.4±4.5</td>
</tr>
</tbody>
</table>

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Molecular and structural changes of bone turnover during inflammatory disease

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Background: New serological markers that can serve as objective indicators of osteoporotic changes in patients with rheumatoid arthritis (RA) are being currently searched [1, 2, 3, 4, 5].

Objectives: To reveal the connection between the concentrations of serum angiopoietin-like protein type 4 (ANGPTL4) and the decrease in bone mineral density (BMD) in patients with RA.

Methods: 114 patients with reliable RA (90.4% of women, 9.6% of men) aged 21 to 80 years (mean age 55.4 ± 11.2 years old, disease duration - 11.18 ± 9.03 years, positive for rheumatoid factor (RF-IGM) - 63.2%, positive for anti-citrullinated protein antibody (ACPA) - 59.7%) were examined using a bone X-ray densitometer LUNAR DPX (GE, USA). Patients with an advanced clinical stage - 49%, moderate activity according to DAS28 - 58.8%, II-III radiological stage - 85.1% and functional class II - 64.9% prevailed. ANGPTL4 measurement in blood serum was carried out by enzyme immunosay using a commercial test system "RayBio Human ANGPTL4 ELISA Kit" (RayBiotech, USA). ESR, RF, as well as C-reactive protein (CRP), ACPA, and antibodies to modified vimentin (anti-MCV) in an ELISA test were determined in all RA patients.

Results: ANGPTL4 indices in RA patients correlated with the CRP level (r = 0.34, p = 0.001) and the DAS28 (r = 0.29, p = 0.002). There was no correlation between the level of ANGPTL4 and the intake of glucocorticoids, both at the time of the study (p = 0.678) and with their long-term (more than 3 months) use (p = 0.097). There was a negative correlation of weak strength between ANGPTL4 and the dose of non-steroidal anti-inflammatory drugs (r = -0.21, p = 0.033). There was no correlation between ACPA, anti-MCV, and ANGPTL4 levels (p > 0.1 and p = 0.084). A direct correlation was found between the level of ANGPTL4 and the presence of osteopenia in RA patients (r = 0.43, p = 0.036), as well as a negative correlation between ANGPTL4 and bone mineral density in the spine (BMD L2.L4, r = -0.631, p < 0.001), but not in the femur (p > 0.05). Densitometry data also allowed to establish a negative correlation between low values of the T-criterion and increased tetrers of anti-MCV (r = -0.51, p = 0.029), but not ACPA (p = 0.276). It has previously been noted that anti-MCV are able to activate osteoclasts with a consequent decrease in periarticular BMD.

Conclusion: The absence of a relationship between anti-MCV and the level of ANGPTL4 may indicate different mechanisms of osteoporososis development and localization of osteoporotic changes in groups of anti-MCV or ANGPTL4 positive patients with RA.

REFERENCES:


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